

SECTION 404 (b) (1) EVALUATION
LOWER MUD RIVER WATERSHED
CABELL COUNTY, WEST VIRGINIA
LOCAL PROTECTION PLAN

This report concerning disposal of excavation materials at Milton, Cabell County, West Virginia is submitted in accordance with Section 404 of the Clean Water Act of 1977 (Public Law 95-217).

I. PROJECT DESCRIPTION

A. Location.

The Lower Mud River and the City of Milton are located entirely within the State of West Virginia. Milton lies approximately 19 miles upstream from its confluence with the Guyandotte River. The project area includes about 4 miles of the Mud River and the major tributaries of Johns Branch and Newmans Branch. The drainage area for the Mud River at Milton is approximately 256 square miles.

B. Description of Proposed Work.

Plan B consists of an earthen levee that would protect most of Milton from flooding up to the 250-year flood level with a 90% certainty. The levee alignment is 8,312 feet (1.57 miles) long and would have an average height of 19.0 feet. The levee embankment has a top width of 10 feet and side slopes of 2.5 to 1. The project begins in east Milton approximately 1,350 feet east of the junction of Johns Creek Road and US 60. From the US 60 highway embankment (Station 0+00) the levee extends southwesterly approximately 2,000 feet across a gravel pit before reaching Mud River (Station 20+50), then extends westerly across bottomland before again crossing Mud River channel (Station 39+50) and Mud River Road north of the bridge (Station 41+75). A stoplog gate closure is provided across Mud River Road as part of the levee plan. The levee embankment continues generally west and southwest for approximately 2000 feet along the north river bank to Newmans Branch (Station 61+70), and then in a westerly direction along Mud River to high ground near the embankment of Abbot Street about 500 feet south of US 60 (Station 83+12).

The selected plan requires two relatively small pump stations, one at Johns Branch and the other at Newmans Branch. A 30,000 gpm pump station and gatewell would be constructed to permit the interior drainage from Johns Branch to be pumped out of the protected area in an event of a storm up to 100-year frequency. A ponding area is created with Plan B in the area between the levee embankment, which is south of Mud River, and the existing river channel. This area of approximately 13 acres has a ponding capacity of 245 acre feet. Because of the large storage capacity of this area, only a small pump station is required. A similar size pump station is required where the levee crosses Newmans Branch. With ponding available along the creek, and with the construction of a small pond (2 acres), a total of about 88 acre feet of storage is provided. Therefore, a relatively small pump station (30,000 gpm) is sufficient to discharge the interior drainage from Newmans Branch in the event of a 100-year storm.

Plan B incorporates a section of new channel in the upper portion of the project above Mud River Road bridge. The levee alignment which extends across the bottomland rather than along the north river bank shortens the length of the project by approximately 500 feet. This alignment avoids acquisition of several businesses and residences along the river bank, but requires the construction of approximately 4084 feet of new river channel. The new channel would have a natural design, with as much sinuosity as practicable to simulate the existing stream. The channel cross section would not be trapezoidal, but have a more natural shape, and maintenance would not be required. Bank stability would be maintained by vegetation, with stone slope protection on outer bends, and clusters of boulders and other features would be placed in the channel to help provide aquatic habitat. The land area between the old and new channels outside the footprint would be utilized for mitigation measures and an interior ponding area.

The levee is designed to have a solid core with a pile cutoff wall. It is estimated that 364,000 cubic yards (cy) of material would be needed to construct the embankment. Much of the material for levee construction would come from excavation of the new channel section and two ponding areas near the pump stations. If additional construction material is needed, it would come from an identified borrow area of approximately 15 acres located just south of the new river section.

C. Authority and Purpose.

The Corps is undertaking structural measures to alleviate the flooding problems experienced in the Lower Mud Watershed as authorized by Section 580 of the Water Resources Development Act (WRDA) of 1996 and Section 340 of the WRDA of 2000.

D. Description of Material.

1. General Characteristics of Proposed Fill Material.

Approximately 2,310 cy and 1,890 cy of stone slope protection in the reach west of Mud River Road Bridge will be constructed. Fill will be placed in the existing river channel as part of the levee construction and will be used as plugs to divert the river from the old channel to the new channel. It will also provide stability to the levee. The river fills will utilize approximately 15,500 cy on the eastern section of the old river channel and 17,000 cy will be utilized in the western section of the old river channel. Both fills will be constructed of random material found in the soil borrow areas.

2. Source of Material.

The soils will be excavated from the new channel location, proposed ponding areas for interior drainage and a 15-acre soil borrow area located in the existing area of pumpkin park and south. Currently, the area of the soil borrow areas are utilized as recreation for the Cabell County Fair and the Pumpkin Festival parking areas or are wooded areas.

E. Description of Proposed Discharge.

1. Location.

Please refer to Section I.A.

2. Size.

Approximately 2,310 cy and 1,890 cy of stone slope protection in the reach west of Mud River Road Bridge will be constructed. Fill will be placed in the existing river channel as part of the

levee construction and will be used as plugs to divert the river from the old channel to the new channel and also provide stability to the levee. The river fills will utilize approximately 15,500 cy on the eastern section of the old river channel River Mile 20.144 (RM 20.14) and 17,000 cy will be utilized in the western section of the old river channel RM 19.41).

3. Type of Disposal Site and Habitat.

There are no designated disposal sites needed for the project. All excavated material will be utilized in the construction of the levee.

4. Timing and Duration of Discharge.

The proposed construction work is expected to last approximately 18 to 24 months. Construction will be performed during high, normal and low flow periods.

F. Description of Disposal Method.

The earth fill for the levee construction will be placed with standard land-based construction machinery.

II. FACTUAL DETERMINATIONS.

A. Physical Substrate Determination.

1. Substrate Elevation and Slope.

Fill material application is designed to form a solid core with sheet pile wall cutoff to construct the levee. The average bottom width of that section of the Lower Mud River is 49.4 feet and median bottom width is 41.5 feet. The average side slope for the left and right banks is 2.2:1 (horizontal to vertical) and median side slope is 2.28:1. Minimum channel elevation at RM 20.14 is 559.52 feet above mean sea level (MSL) and at RM 19.41 the minimum channel elevation is 555.73. The average water surface slope from RM 20.14 to RM 19.41 is approximately 0.00042.

2. Sediment Type.

Covering of existing substrates and surrounding area with earth fill are proposed. The existing substrate consists of sand, silt and clays.

3. Dredged/Fill Material Movement.

Project intent is to construct a new channel for the Mud River so as a levee may be constructed to protect the town from flooding. All material excavated through construction of channel relocation, ponding areas etc to the levee section of the project will be used in construction of the levee. There are no disposal sites proposed or needed for this project. The levee will be seeded and landscaped in an environmentally beneficial manner once construction is complete. Standard sediment control measures will be used throughout the process.

4. Physical Effects on Benthos.

Any existing aquatic and terrestrial populations occupying Mud River and surrounding land will be disturbed during the channel relocation and construction of the levee. However, benthos will colonize the channel rather quickly from undisturbed upstream and downstream sources. Placement of the fill material will disturb benthic populations in two sections of the Mud River that will be covered by the levee. The proposed interior ponding area will cease to exist as a river channel, but will be replaced as a wetland area and interior drainage ponding area.

5. Other Effects.

Cultural /historical resources are not present within the project area.

6. Actions Taken to Minimize Impacts.

Impacts listed are expected to be permanent; however, on-site environmental design measures will not only minimize impacts, but over time will improve areas designated for wildlife habitat.

B. Water Circulation, Fluctuation, and Salinity Determinations.

1. Water.

a. Salinity. Not Applicable

b. Water Chemistry. During construction, run-off will introduce some suspended solids into the Mud River and temporarily increase sedimentation down river to an extent.

2. Clarity. Only short term increases in turbidity are expected. Standard best management practices and seeding are planned to prevent run-off erosion.

C. Color. No effect.

D. Odor. No effect.

E. Taste. No effect.

F. Dissolved Gas Levels. Until riparian vegetation is established and mature in the new channel, temperature increases may occur, thus decreasing dissolved oxygen. In stream structures will aid in adding turbulence to aerate the water. The planting plan includes fast growing native tree and shrub species to quickly help shade the new channel.

G. Nutrients.

No significant nutrient effects aside from possible dissolution of carbonates should limestone be used as the graded stone source. If this is the case, impacts would be beneficial. In stream structures will aid in adding turbulence to aerate the water. The planting plan includes fast growing native tree and shrub species to quickly help shade and add nutrients (detritus) to the new channel. Logs from the site will be added instream to assist in reestablishing the channel.

H. Eutrophication. No significant effect.

I. Other as Appropriate Not applicable.

1. Current Patterns and Circulation.

a. Current Patterns and Flow. The Lower Mud River channel may be expanded in width in some locations, however, the flow gradient and channel length will not be affected by this project.

b. Velocity. Water velocity will not be affected by the proposed project.

c. Stratification. Not applicable.

d. Hydrologic Regime. No significant changes.

2. Normal Water Level Fluctuations.

Normal water level fluctuations will not be affected by this action. In-stream features will be constructed to mimic the natural stream bed.

3. Salinity Gradients. Not applicable.

4. Actions that will be taken to minimize impacts.

Appropriate measures have been identified and incorporated in the proposed plan to minimize adverse effects of the project on the aquatic environment. These measures include stone slope protection of erosion prone areas, proper design and construction, use of environmentally acceptable fill material, and revegetation with fast growing native tree and shrub species of exposed soils not protected by stone. Instream structures will also be constructed to return a more natural contour to the stream bed while also improving dissolved oxygen levels. Revegetation will also improve nutrient levels.

J. Suspended Particulate/Turbidity Determinations.

1. Expected changes in suspended particulates and turbidity levels in vicinity of new channel construction. Fill materials consist of natural granular materials and are not expected to create significant turbidity or sedimentation.

2. Effects on chemical and physical properties of the water column.

a. Light Penetration. See Section II.B.(2). Minor reduction will occur during construction period due to turbidity. Best management practices will be employed during construction to minimize turbidity levels.

b. Dissolved Oxygen. Instream structures will be placed to mimic current conditions. Fast growing terrestrial vegetation will assist in reducing temperature increases.

c. Toxic Metals and Organics. Phase I and II HTRW studies indicated the granular materials and natural stone fill are not likely to contain harmful contaminants. Discussions of the results of all testing and clean-up plans are included in the Engineering Appendix.

d. Pathogens. See Section II.J.2.(c) , immediately above.

e. Aesthetics. Although the channel area may have an artificial appearance, over time natural succession of terrestrial resources in addition to the planting plan will enhance wildlife resources. The landscaping plan greatly increases edge effects and compliments the new channel construction.

3. Effects on Biota.

a. Primary Production, Photosynthesis. No significant effects.

b. Suspension/Filter Feeders. No significant effects.

c. Sight Feeders. No significant effects.

4. Action to Minimize Impacts. Fill areas will be protected by planting vegetation as soon as possible to prevent erosion. Placed rock would minimize bank erosion and related turbidity levels.

K. Contaminant Determination. See Section II.J.2.(c) .

L. Aquatic Ecosystem and Organism Determinations.

1. Effects on Plankton. Turbidity levels may temporarily affect plankton populations through abrasions by suspended material and light transmission reduction. However, neither phyto- nor zooplankton are present in appreciable quantities.

2. Effects on Benthos. See Section II.A.4 and Section II.J.3.b.

3. Effects on Nekton. Ordinarily, adverse effects on fisheries would be possible from temporary increases in water temperature during the construction period, especially during spawning periods. Instream structures will be placed to give shade. It is unlikely that turbidity will exceed normal levels.

4. Effects on Aquatic Food Web. Loss of riparian vegetation associated with the project could affect stream allochthonous energetics or temperature regimes. However, over time, through plantings and natural succession, the aquatic food web will return to normal.

5. Effects on Special Aquatic Sites.

a. Wetlands. There are 1.9 acres of wetlands in the proposed project area.

b. Threatened and Endangered Species. According to the Federal List of Endangered Species, the USFWS and Huntington District's field investigations, there are no federally listed endangered species in the project area.

6. Other wildlife. Impacts of the new channel would be of temporary nature during construction activity. Over the life of the project, wildlife habitat will be enhanced by the proposed environmental design features and the restriction of development within the confines of the channel corridor.

7. Actions to Minimize Impacts. The proposed material placement activities would be accomplished under conditions that would minimize, to the extent practicable, adverse effects on aquatic ecosystem. Best management practices will be employed to avoid sedimentation.

M. Proposed Disposal Site Determinations.

1. Mixing Zone Determination. No discharge of liquid material would be involved with project construction.

2. Determination of Compliance with Applicable Water Quality Standards. Fill activities would be in conformance with the State of West Virginia standards.

3. Potential Effects on Human Use Characteristics.

a. Municipal and Private Water Supply. See II.I.

b. Recreational and Commercial Fisheries. See II.J.3.b., II.J.3.c., and II.L.3.

c. Water Related Recreation. No impact.

d. Aesthetics. See II.J.2.e.

e. Parks, National and Historical Monuments, National Seashores Wilderness Areas Research Sites, and similar Preserves. None.

N. Determination of Cumulative Effects of the Aquatic Ecosystem.

Protection of the riverbank will reduce stress associated chronic turbidity, failed soil and related sediment yields. Placement of fill will expand habitat diversity and hence population diversity within the ecosystem. The new channel construction may temporarily impact the ecosystem in the vicinity of the new channel corridor. However, over the life of the project, the riparian corridor will be protected from development and encroachment and will provide the habitat diversity for the ecosystem.

O. Determination of Secondary Effects on Aquatic Ecosystems. See II.N.

III. FINDINGS OF COMPLIANCE OR NONCOMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE.

A. No significant adaptations of the guidelines were made relative to this evaluation.

B. Alternatives. Two alternatives for levee construction were considered for the project.

1. Alternative A. Construct a levee which will protect the city of Milton to a 250 year flood. A new channel for a section of the Mud River would be constructed. Please refer to Section I.B. for details of the levee design.

2. The No Action Alternative would result in continued property damage for both residents and commercial property in the vicinity.

C. Description of Proposed Work. Work to be performed consists of Alternative A, listed above.

D. The proposed placement of fill material will not result in significant adverse effects on human health and welfare, including drinking water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, or special aquatic sites. Aquatic life and other wildlife will not be adversely affected. No significant adverse effects on aquatic ecosystem diversity, productivity and stability, or recreational, aesthetic and economic values will occur.

E. Appropriate steps to minimize potential adverse impacts from any discharges on aquatic systems have been incorporated.